CONFIDENTIAL

10 October 1960

MEMORANDUM FOR: Office of Logistics/Procurement Division/Contract Branch

SUBJECT : Request for Increase in Scope with Additional Funds under Task ER of Contract RD-26 with [redacted] 25X1
[redacted] 25X1

1. It is requested that your office take the appropriate action to amend the scope of Task ER to include further development of the Model 2, Air-Fed Incinerator, particularly with regard to its motor-blower assembly capability and adaptability to different kinds of electric power. This work is to be accomplished in accordance with the contractor's proposal attached hereto.

2. Funds in the amount of $8,480.00 are to be made available to the contractor for an additional five months period of performance. Charges are to be made against Allotment Number 1125-1009-1901.

3. The contract and task are Agency sterile. The item per se is unclassified. Government interest may be shown. Agency interest in all work and material under the contract and task is classified Secret and may be divulged only on a need-to-know basis to appropriate security approved personnel.

4. Further information concerning this request may be obtained by contacting the project engineer for this program, [redacted] Room 210, 25X1
West Outbuilding, extension [redacted] 25X1

25X1

[redacted]
Chief
TSD/Engineering Branch

Attachments:
TSD-913-27-1496-61
Proposal dated 29 Sept 1960

APPROVED FOR THE OBLIGATION OF FUNDS:

Distribution:
Orig & 1 - Addressee
1 - TSD/PASS
1 - TSD/Sec
1 - EB-178B-1
1 - EB Chrono
1 - [redacted] 25X1

Research Director — Date

DD/P/TSD/EB/MT

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In replying please address:

[redacted]

25X1

September 29, 1960

Dear Sir:

As a result of recent discussions with your technical representatives, we are submitting herewith a proposed program of research directed toward the further development of the Model 2 incinerator, particularly with regard to its motor-blower-assembly capability and adaptability to different kinds of electric power.

Under Task Order No. RR, an experimental, reduced-size air-film-cooled incinerator (Model 2) was developed for the destruction of classified papers and documents. In the course of the development of the Model 2 unit, burning rates of from 85 to 138 lb per hr were obtained with various kinds of paper; during the corresponding experiments, an oversized, temporary, externally mounted motor-blower assembly was used to facilitate the determination of the air-flow requirements for the eventual motor-blower unit which was to be mounted integrally in the base, below the combustion chamber. Later, it was found that the highest capacity blower which was commercially available and which was small enough to fit into the limited space provided actually delivered less air than the previously determined required flow of 800 cu ft per min at 4-in. water pressure. This decreased air flow resulted

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in a reduction of about 20 per cent in the burning rate - to between 77 and 112 lb per hr. Further, these burning rates were obtained with the blower connected directly to a 3,450-rpm, 60-cycle, 3-phase, 220-volt electric motor so as to achieve compactness; this motor-blower assembly would suffer a further loss in output of air if it was operated on 50-cycle current, with a corresponding motor speed of 2,900 rpm. However, the original informal objective of an 80 to 130 lb-per-hr burning rate at the 3,450-rpm (60-cycle current) motor speed was met fairly well in a unit which had an outside shell diameter of 22 in. with only a slight outward bulge (about 3/4 in.) in a small area at the rear of the unit.

Subsequent considerations by your technical representatives have shown a need for motor-blower assemblies which would be adaptable to various typical electric-power supplies, as well as to substitution of an auxiliary gasoline-engine drive for providing standby power. In addition, it is considered worth while to increase the blower capacity so as to raise the burning rate up to the previously achieved level. It is also desired that provision be made for interchangeability of the entire lower section (motor-blower-assembly section) of the Model 2 incinerator so as to be able to accommodate the various types of motor-blower combinations currently envisioned for use with the Model 2.

The immediate needs of your technical representatives, as outlined in a meeting on September 14, 1960, and in recent telephone discussions, are as follows:

(1) An entire Model 2 unit, similar in design to the original unit, but with an interchangeable lower

section containing a motor-blower assembly which would operate on 110-volt, single-phase, 50 or 60-cycle current.

(2) An extra interchangeable lower section containing a motor-blower assembly which would operate on 208, 220, or 440-volt, 3-phase, 50 or 60-cycle current. This section could be used to replace the present lower section of the original Model 2 unit in which the motor is limited to 60-cycle-current operation.

It would be desirable for both of the above-mentioned motor-blower assemblies to incorporate provisions for emergency operation with a small, portable gasoline engine through a temporary belt drive. These provisions would include a readily accessible pulley, and brackets and a base for securing a suitable engine to the outside of the motor-blower-assembly section. At least for the present, your technical representatives are not interested in providing the gasoline engine.

Other modifications and additions which appear to merit consideration include (1) an increase in the diameter of the motor-blower-assembly compartment from the present 22 in. to 24 in., which is the dimension of the present flanges, to provide additional space for more versatile motor-blower assemblies; (2) provision of an appropriate latch arrangement which would permit securing the air-damper handle safely in the "Off" position during the loading period; (3) provision of further safety features regarding the glass portion of the viewing ports, if feasible; and (4) continued emphasis on minimizing the emission of small pieces of black char in the stack gases.

Your technical representatives have requested that consideration be given to the performance of a program of research directed toward the further development of the Model 2 unit as described above. A proposed program is described in the following.

Objective

The objective of the proposed program would be to conduct research directed toward the further development of the Model 2 incinerator, in an attempt to provide for the immediate needs and modifications described above, to the extent practical.

General Method of Procedure

Recent discussions with your technical representatives and representatives of the [redacted] have resulted in an approach which is believed to be applicable to this problem. It appears that this approach would provide the needed adaptability in the blower drives for different motor speeds based on 50 or 60-cycle current, as well as the desired boost in blower output to the originally desired value of at least 800 cu ft per min at 4-in. water pressure. To achieve these goals, it is contemplated that a belt-driven version of the present blower would be used. The blower speed could be increased to boost the air flow, and the appropriate blower speed could be maintained at either 50 or 60-cycle motor speed by the use of suitably sized pulleys for the belt drive. Various electric-power voltages could be accommodated by supplying the proper voltage-rated motors in the field, if and when necessary.

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To allow more space for this kind of less compact, motor-blower arrangement, it was generally agreed at the meeting on September 14 that the diameter of the motor-blower-assembly compartment of the unit could be increased to 24 in.; no change in the height of the unit would be required. With a 24-in.-diameter lower section, a bulge of about 3 in. would still be needed at the rear to provide space for part of the drive assembly. This arrangement would also provide the necessary access to the blower pulley, for connection of a small gasoline engine when needed.

An alternative approach, also discussed briefly on September 14, involves the possible availability of a smaller version of the No. 25 MW direct-driven blower which is in use on the larger Model 1 incinerator. It is our understanding that a smaller blower, which is to be designated as No. 16 MW, is well along in development at the [redacted] It appears that such a blower would have sufficient output, even at the 50-cycle speed, to satisfy the requirements; also, it might prove to be the best choice for the 24-in.-diameter compartment because of the compact direct-drive arrangement which could be used. In the proposed program, further attention would be directed to the suitability of this blower as compared to that of the belt-driven No. 22 Volume Fan. An appropriate discussion would be held with your technical representatives before a choice would be made.

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It is contemplated that two independent, but interchangeable experimental lower sections (motor-blower-assembly compartments) would be prepared on the basis of the various considerations discussed above. One would be equipped with a motor-blower assembly for operation on 50 or 60-cycle, 110-volt, single-phase electric power. The other would be equipped

for operation on 50 or 60-cycle, 208, 220, or 440-volt, 3-phase electric power. Other features of the original motor-blower-assembly compartment such as sound insulation, damper assembly, and an air-damper handle which interlocked with the loading-door latch would be incorporated in the new experimental motor-blower compartments. Also, a new safety latch which would lock the air-damper handle in the "Off" position during loading would be provided for each unit. Consideration would be given to the preparation of appropriate air-damper control plates, to facilitate the operation on either 50 or 60-cycle current. Every effort would be made to minimize the size of the bulge required at the rear of each experimental compartment and to streamline the bulge so that it would have as round and unobtrusive an appearance as is practical.

A top portion, including the cylindrical combustion section, the truncated-conical section which houses the grid, and also associated components, would be fabricated experimentally on the basis of the design which was used in the original Model 2 unit. It is expected that almost the same configuration of air-cooling louvers and combustion-air nozzles would be used. However, a decrease in the louver gap (from 0.031 in. to 0.025 in.) of the air-cooling louvers located in the upper, cooler half of the combustion-chamber liner would be considered as a possible means of increasing the operating temperature in the corresponding zone, in an attempt to minimize the emission of small pieces of char in the stack gases. A 6-ft length of stack and a radiant-heat shield would also be included. The instrument panel with a temperature-indicating gage would be relocated to a position at the front of the truncated-conical section, where it would be protected by the radiant-heat shield.

After the various above-indicated experimental assemblies were prepared, the top portion and one of the motor-blower compartments would be assembled; the resulting experimental unit would be operated on 60-cycle current during approximately three burning experiments, each using about 200 lb of paper, to evaluate its performance. An 8-hour continuous burning experiment using an assortment of papers would also be run. The results obtained from these experiments would be compared with those from the original Model 2 unit.

The second motor-blower compartment would then be substituted for the other compartment in the experimental incinerator. Two burning experiments, each using about 200 lb of paper, would be repeated, to evaluate the performance of this combination.

During the course of the evaluation efforts, the operation of both combinations would be demonstrated to your technical representatives. Any mutually agreed upon minor modifications stemming from such demonstrations would be incorporated in the units, within the limits of the time and funds provided.

Every effort would be made to expedite the performance of the proposed research. If, as expected, the results of the proposed efforts are favorable, it is currently estimated that the experimental units could be submitted to your technical representatives, for further evaluation, by approximately three months from the start of the proposed research period.

Further, if and when suitable contractual arrangements are set up to provide for the efforts proposed herein and also in our letter dated

September 14, 1960, relative to the preparation of working drawings for the Model 2 incinerator, every effort would be made to coordinate all of these proposed activities, so as to aid in expediting the currently planned procurement, by your technical representatives, of several suitable Model 2 units from a commercial fabricator.

Reports and Liaison

Monthly letter reports would be submitted to keep your technical representative informed of the progress of the proposed program. These would be supplemented by meetings and telephone discussions with your technical representatives as needed. At the conclusion of the proposed research period, a summary report describing the results of the effort would be submitted.

Duration and Costs

It is proposed that the contract provide for a five-month period of research, with an estimated appropriation of $8,480, including the fixed fee. A general breakdown of the estimated costs is attached.

The Contract

The proposed contract would be a period-basis research agreement, consistent with our current contractual arrangements and providing only for a fixed period of research leading toward the objective outlined in this proposal.

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 September 29, 1960

If you should have any questions with regard to this proposal, please let us know. Any inquiries of a contractual nature may be directed to [redacted] at Extension 159. 25X1

Very truly yours,

[redacted] 25X1

EES:mlm

In Duplicate

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